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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
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Seattle, WA 98101-3140

MAR 13 2012

OFFICE OF
COMPLIANCE AND ENFORCEMENT

Reply to: OCE-127

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James Cagle, Risk Manager - EHS
Nu-West Industries, Inc.
Agrium Conda Phosphate Operations
3010 Conda Road
Soda Springs, Idaho 83276

Re: Video Log and Flow Meter Testing of Mountain Fuel Well, report dated January 25, 2012;
Discrete Interval Groundwater Sampling, report dated January 18, 2012;
Groundwater Sampling of Wells A-13 through A-21, A-23, and A-25, report dated January 25, 2012;
Nu-West Industries, Inc., Conda Phosphate Operations Facility, Administrative Order on Consent;
EPA Docket No. RCRA-10-2009-0186

Dear Mr. Cagle:

This letter is in response to the three reports identified above that were submitted pursuant to the June 2009 Administrative Order on Consent (Order) issued under Section 3013 of the Resource Conservation and Recovery Act, Docket No. RCRA-10-2009-0186. After a careful review of the reports, EPA has determined that not all of the work was carried out in accordance with the approved work plan.

The flow meter tests at the Mountain Fuel well and the discrete interval sampling at most of the wells were not carried out in accordance per the approved work plan. EPA neither received any requests for a deviation from the approved work plan, nor was EPA informed of any technical challenges as this work progressed. The work under the Order is required to be completed in accordance with the approved work plan. Failure to complete work in accordance with the approved work plan and schedule can subject Nu-West to enforcement action, including the assessment of stipulated penalties. Stipulated penalties can be assessed per violation, per day. Therefore, Nu-West needs to take action to complete the required work that is past due as soon as possible.

Video Log and Flow Meter Testing of Mountain Fuel Well, report dated January 25, 2012

The flow meter testing work at the Mountain Fuel well was not carried out in accordance with the approved Work Plan for Additional Requirements. As a result, flawed data was reported and cannot be relied upon to provide reliable information to indicate the depth(s) of interflow zones and hydraulically active fractures contributing groundwater inflow to the Mountain Fuel Well. The flow meter tests in the Mountain Fuel Well will have to be redone and in accordance with the approved work plan.

The report cover letter, page 3, summary paragraph states the following:

> In summary, the flow meter testing results did not provide evidence of any significant zones of inflow or outflow in the Mountain Fuel Well…Based on the above findings, WSP recommends that discrete interval groundwater sampling not be conducted in the Mountain Fuel location.

Section 5.1.2 of the approved work plan states the following:

> The non-pumping flow meter test will be recorded first to measure any ambient flow, followed by logging under pumping conditions. Given the large well diameter, a diverter assembly (HPF) or packer (EMF) will be employed to properly focus the flow around the meter at each measurement interval.

Despite observing very little signal from the test equipment, the logging contractor added neither a diverter assembly nor a packer. This appears to have been a serious error. The rest of the data and the report are dedicated to explaining how it is possible for the data to not make physical sense and why the data are predominantly at the detection limit for the equipment. Such a diverter would be expected to improve resolution of the equipment by a factor of more than 400.

The reported data findings of the test do not make sense. This appears largely due to the instrument being at or near the lowest bound of its sensitivity for the majority of readings collected. Other readings, which appear to be significantly above the meaningful measurement range cannot represent physical reality within the well since they show downward flow while the well is being pumped from the top of the water column. This is in a section of the well bore that during the ambient testing showed no flow or showed indications of upward flow across the same interval. This is also from a section of the well bore without any visible means of entry or exit for water - that is in blind casing. The report correctly notes that this does not make sense. The contractor tested the instrument for sensitivity, sense, and calibration by making measurements during instrument movement which were consistent with the velocity and direction of the movement. The explanation appears to have identified the mistake of operating the instrument without the flow diverter necessary to magnify the resolution by a factor of approximately 400 so as to obtain meaningful results.

Section 5.1.2 of the approved work plan also states the following:

> Additional flow meter tests will be recorded at higher pumping rates following the procedure outlined above, until achieving a rate that allows for groundwater inflow to the well under both passive and a range of pumping stresses.

Additional flow meter tests were not performed. Had such additional tests been performed at higher pumping rates, it is possible that the increased flow rates would have resulted in meaningful data.

The flow meter tests at the Mountain Fuel Well will have to be redone and in accordance with the approved work plan. Sufficient weight must be added to move the instrument through the well while equipped with the diverter.

The Geophysical Logging Results report, page 2, Section 1.2 (EM Flow Meter Logging), states the following:

> No diverters were used in this large-diameter well per the probe manufacturer's recommendations for logging in large-diameter well bores. The presence of a diverter in a large diameter casing would prevent the relatively light-weight probe from advancing down the well bore.

EPA did not receive any request for a deviation from the approved work plan. Given the measurements recorded during testing, this recommendation should have been questioned by the personnel overseeing the test. Use of a diverter and the addition of weight to the assembly would have completed the testing in accordance with the approved work plan.

Discrete Interval Groundwater Sampling, report dated January 18, 2012

Section 5.1.1 of the approved work plan states the following:

> Preliminary field results of the flow meter testing and initial recommendations for discrete interval groundwater sampling (see Section 5.2.1) will be provided to EPA within 7 calendar days after the completion of the field activities. The final results of flow meter logging and final recommendations for the discrete interval sampling activities will be provided to EPA within 20 calendar days of completion of logging activities.

Table 1 of the report indicates that the "Actual Pumping Rate" column reports values for nearly all of the wells far below the target rates recommend by Nu-West in a letter dated September 27, 2011 and approved by EPA letter dated September 29, 2011. The rates agreed to during conference calls on September 15 and 22, 2011 were based on the rates identified as necessary to overcome natural flow between horizons or within the well bore. With the exception of wells MW05-2 and MW05-5, the wells were not pumped at the rates approved by EPA.

The failure to achieve target rates calls into question the potential interpretation of the data and its usability to provide information on vertical hydrogeochemical variations in the aquifer and to guide the selection of appropriate sampling intervals for future groundwater monitoring activities, as stated in section 5.2 of the approved work plan. A combination of packers and pumps must be obtained to meet the objectives of the sampling. Nu-West needs to locate equipment suitable for conducting the sampling and to carry out the work per the approved work plan.

EPA has also identified additional data needs to help clarify our understanding of the data being reported. These comments are identified in the attached document. EPA requests that Nu-West provide a response to the comments, including all information requested, within forty-five (45) calendar days of your receipt of this letter. If Nu-West is unable to provide a response and all of the requested information within that time frame, please contact me in the next seven (7) calendar days so that we may discuss how best to proceed

If you have any questions, feel free to call me at (206) 553-2964. Alternatively, you may reach me via email at: Magolske.Peter@epamail.epa.gov. Thank you for your attention to this important matter.

Sincerely,

Peter Magolske
Air / RCRA Compliance Unit

Enclosure

cc: Brian Monson, Idaho Department of Environmental Quality
P. Scott Burton, Esq. Hunton and Williams LLP

Enclosure

EPA comment 1:

During the video inspection of the Mountain Fuel well, the lens was not protected as the camera was lowered through the film of the water surface. The resulting degradation of the quality and resolution of the video made it difficult to see many details of the well interior. The camera was often not focused during the run. Still, the features of interest such as the absence of major structural failure of the casing and the nature and extent of the slots were visible. A temporary cloth or clear plastic covering are often used in groundwater investigations to protect the lens surface when lowering through the water surface.

EPA comment 2:

Discrete Interval Groundwater Sampling report page1, paragraph 2 states the following:

> Packers were successfully deployed in six of the eleven wells (i.e., A-9A, A-11, A-12, MW-05-02, MW-05-4, and MW-05-5).

A footnote to Table 1 states the following:

> Packer assembly could to be deployed to the proposed Discrete Interval..

It is not clear what this footnote means. Only 54% of the packers were installed as described in the approved work plan. EPA needs to better understand why packers were not deployed in five of the eleven wells and what attempts were made to do so. The delivered data are incomplete and the work will have to be completed.

EPA comment 3:

Discrete Interval Groundwater Sampling report page 1, paragraph 4 states the following:

> Purge water quality was monitored with a Horiba U-52 model water quality meter equipped with a flow through cell for pH, specific conductance, turbidity, dissolved oxygen, temperature, oxidation-reduction potential, and total dissolved solids (TDS) until the parameter stabilized within 10%, at which point a sample was collected.

The Discrete Interval Groundwater Sampling report did not provide water quality parameter data collected during purging of each zone, such as pH, electrical conductivity, oxygen, ORP and temperature. This is necessary information in order to complete the review, because it provides basic information for evaluating the chemistry of the waters produced by these wells. These parameters were required for evaluation of the purging of the wells prior to sampling, as specified in Section 5.2.1 of the approved work plan.

EPA requests that the series of data values recorded during purging and the final values established prior to sample collection be provided. Paragraph 89 of the Order requires that Nu-West submit to EPA the results of all sampling and/or tests or other data generated by, or on behalf of, Nu-West pursuant to the requirements of the Order.

EPA comment 4:

Discrete Interval Groundwater Sampling report table 3 presents a number of values which should be in **bold**. Specifically, the fluoride values for MW-A and MW-B exceed the EPA maximum contaminant level (MCL). Many of the values for sulfate and nitrate also exceed standards and are not in **bold**. EPA notes that Table 5 in the Revised Sampling and Analysis Work Plan for Site Characterization, dated June 29, 2010 contains an error with respect the federal MCL for fluoride. The MCL is 4 mg/l.

EPA requests that for this and all future sampling reports, Nu-West correctly identify those parameters which exceed water quality standards.

EPA comment 5:

Groundwater Sampling of Wells A-13 through A-21, A-23, and A-25 report table 5 presents the sampling results from the new wells. In order to facilitate EPA review and to assist the state in beginning to assess the zone of discharge question, a greater level of detail is necessary when reporting groundwater data.

EPA requests that the presented data be supplemented with additional graphical presentations. Specifically, present the data as a series tri-linear diagrams or "Piper Plots". These basic graphical tools allow comparisons of waters with different chemistries. They facilitate the rapid evaluation of the evolution of groundwater as it moves beneath the facility.

Provide cation data showing calcium vs. magnesium vs. (sodium plus potassium) on a series of tri-linear diagrams. Show anion data on a series of tri-linear diagrams constructed with chloride vs. sulfate vs. nitrate. Additionally, for this and all future sampling reports, produce figures with the spatial distribution of the major constituents on cross sections and plan diagrams. These constituents shall include calcium, magnesium, potassium, sodium, chloride, fluoride, nitrate and sulfate.

EPA requests that charge balances be calculated for all samples collected and reported for the data in this report and as well as in all future analytical reports. Charge balance calculation from the major cations and anions is a basic tool for the evaluation of the data and adequacy of the current list of analytes.

The dissolved oxygen (DO) measurements and oxidation-reduction potential (ORP) measurements appear to contradict one another. The source of these discrepancies needs to be investigated and remedied. EPA requests that the calibration procedure and calibration records for the DO and ORP instrument(s) used during this sampling event be provided.

EPA comment 6:

Groundwater Sampling of Wells A-13 through A-21, A-23, and A-25 report page 2, first sentence states the following:

> Water levels were measured in all wells with an electronic water level indicator and recorded in the field log book prior to sampling. Water level measurements are provided in Table 2.

Table 2 reports groundwater levels to the nearest foot.

Section 7.1.1 of the approved work plan states the following:

The depth to groundwater (to the nearest 0.01 foot) will be measured from the reference point on the north side of the inner well casing using an electronic water level meter.

It is unlikely that the well pair A-25S and A-25D are at the same exact potential. The actual measurement to the 0.01 foot resolution is necessary for evaluating the vertical gradient. EPA requests that the water level data be reported to 0.01 foot for all wells and that the resulting data be plotted both on a figure for review and a graphically contoured site map to facilitate interpretation.

EPA comment 7:

Groundwater Sampling of Wells A-13 through A-21, A-23, and A-25 report table 3 presents ORP data and DO values that are geochemically incongruent and unlikely to be correct. The dissolved oxygen values measured in up-gradient wells A-15, A-16 and all of the down-gradient wells with the exception of A-23 and A-25S are at odds with each other. It appears the ORP instrument was not accurately responding to the actual geochemical makeup of these waters.

EPA requests that an appendix be added to the revised report, which includes the calibration procedure and calibration records for the DO and ORP instrument(s) used during this sampling event. Additionally, provide specific information on the chemistry of the reference electrode used in this instrument.